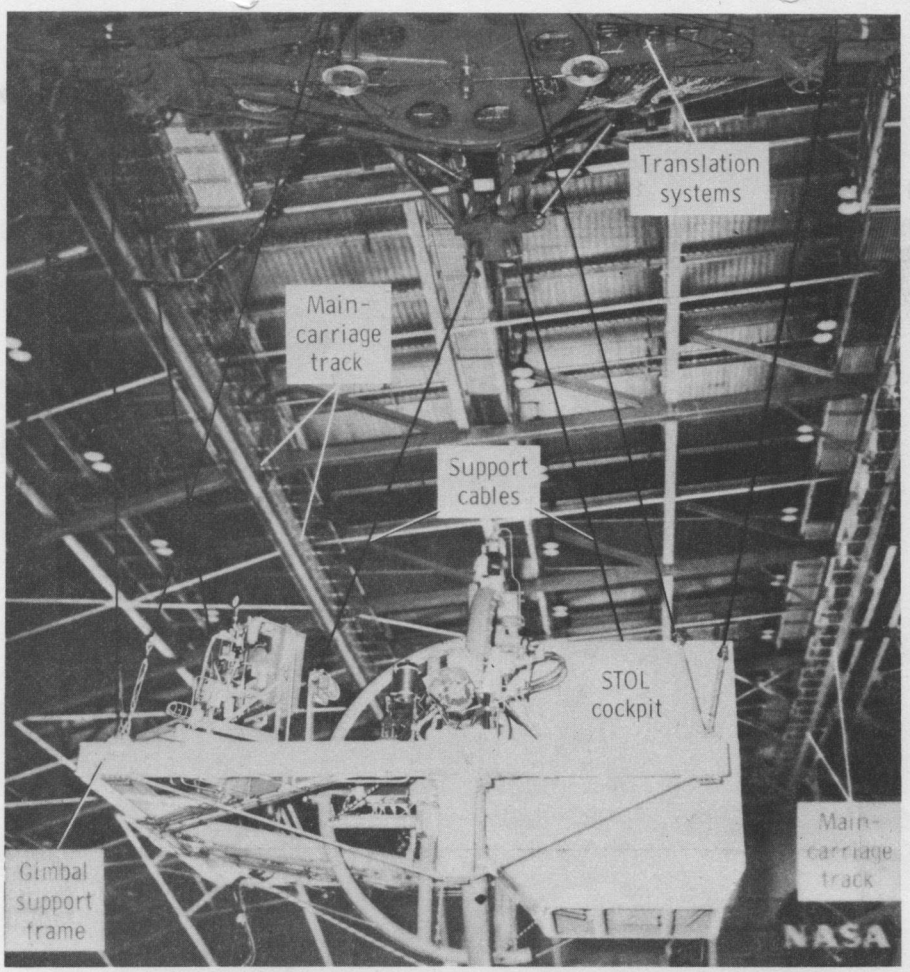
LANGLEY RESEARCH CENTER

FACILITY LOCATION	Hampton, Virginia 23665
FACILITY NUMBER	1244
FACILITY NAME	Real-Time Dynamic Simulator
FUNCTIONAL NAME	Real-Time Dynamic Simulator
TECHNOLOGICAL AREAS	Open- and closed-loop pilot control problems, aircraft landing approaches, simulator validation studies, passenger ride quality studies

INITIAL COST	$ 320 K	YR. BUILT	1963	STATUS CODE	Active
ACCUM. COST	$ 325 K	NASA B.O.D.	1963	OWNER CODE	NASA
LIFE EXPECT.	Indef.			OPER. CODE	NASA

CONTRACTOR NAME (if contr. oper.)	
POTENTIAL	The simulator can be used in any low-frequency, 6-degree-of-freedom, motion-base simulation requiring no more than 2 subjects.
PLANS	The facility will be used to study low-frequency ride quality problem areas.
OTHER INFO SOURCES	A Full-Size Pilot-Controlled Docking Simulation of the Apollo Command and Service Module with the Lunar Module, NASA TN D-3688, 1966; Dynamic Simulation of Lunar Module Docking with Apollo Command Module in Lunar Orbit, NASA TN D-3972, 1967; Ride Quality Research Activities at NASA Langley Research Center, NASA TM X-2620, pp. 229-245
COGNIZANT ORG. COMPONENT	Flight Dynamics and Control Division
LOCAL CONTACT FOR FURTHER INFO	Chief, Research Facilities Engineering Division, Code 56.000; (804) 827-3171



DESCRIPTION

The Real-Time Dynamic Simulator is composed of a 3-axis gimbal frame suspended by 8 cables from an overhead carriage/dolly system traveling on tracks in the top of the Langley flight hangar. This system is linked electronically to an analog computer and an amplidyne control center in a closed-loop manner so that the pilot inside the gimbal experiences all 6 degrees of freedom. The system is also linked to the Langley real-time digital computer system and the Langley landing terrain scene generator (TV monitor). The 8 cables, which provide an essentially weightless link between the 5000-lb attitude gimbal and the overhead carriage/dolly unit, are angled to prevent sway and are hydraulically counterbalanced to provide smooth vertical travel with minimum control power.

The facility will accept cockpits of different sizes and shapes.

Removed

Gimbal-Hydraulic Drive

	Rate rad/sec	Acceleration rad/sec^2
Pitch	1	1
Yaw	1	1
Roll	1	1